Java SE 8 for Tablets, Pis, and Legos

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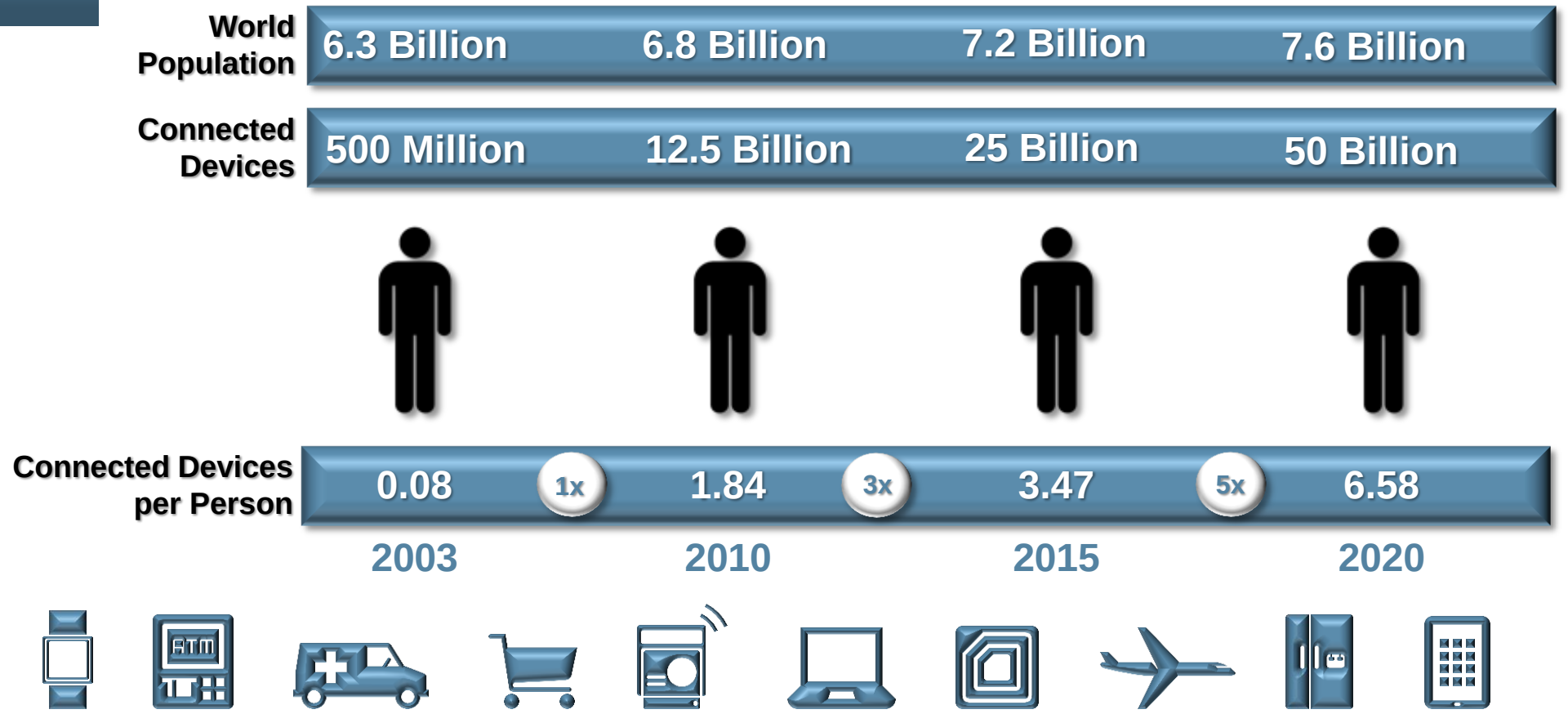
Java Technology Ambassador
JavaOne Content Chair

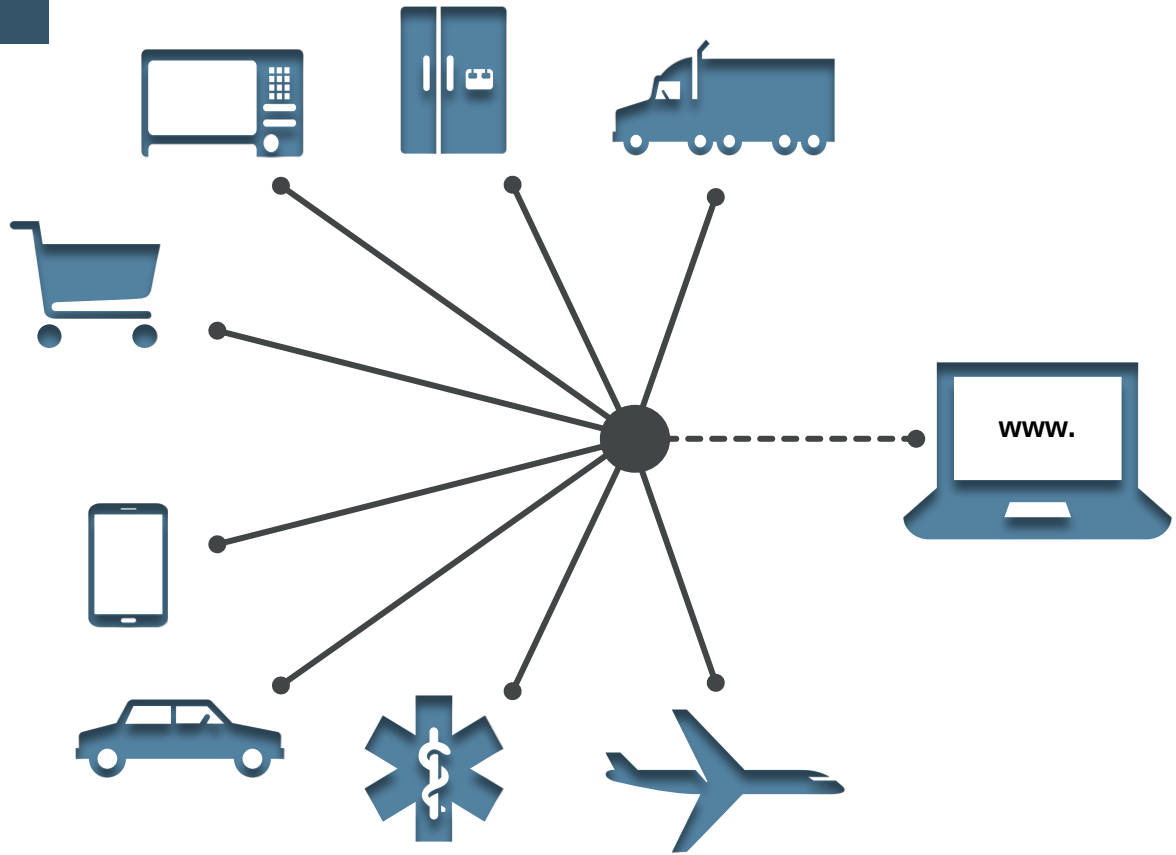
@steveonjava

http://commons.wikimedia.org/wiki/File:Genting_Highlands_theme_park.jpg


Lego
Mindstorms
Dev
Boards
DukePad
iOS
Android

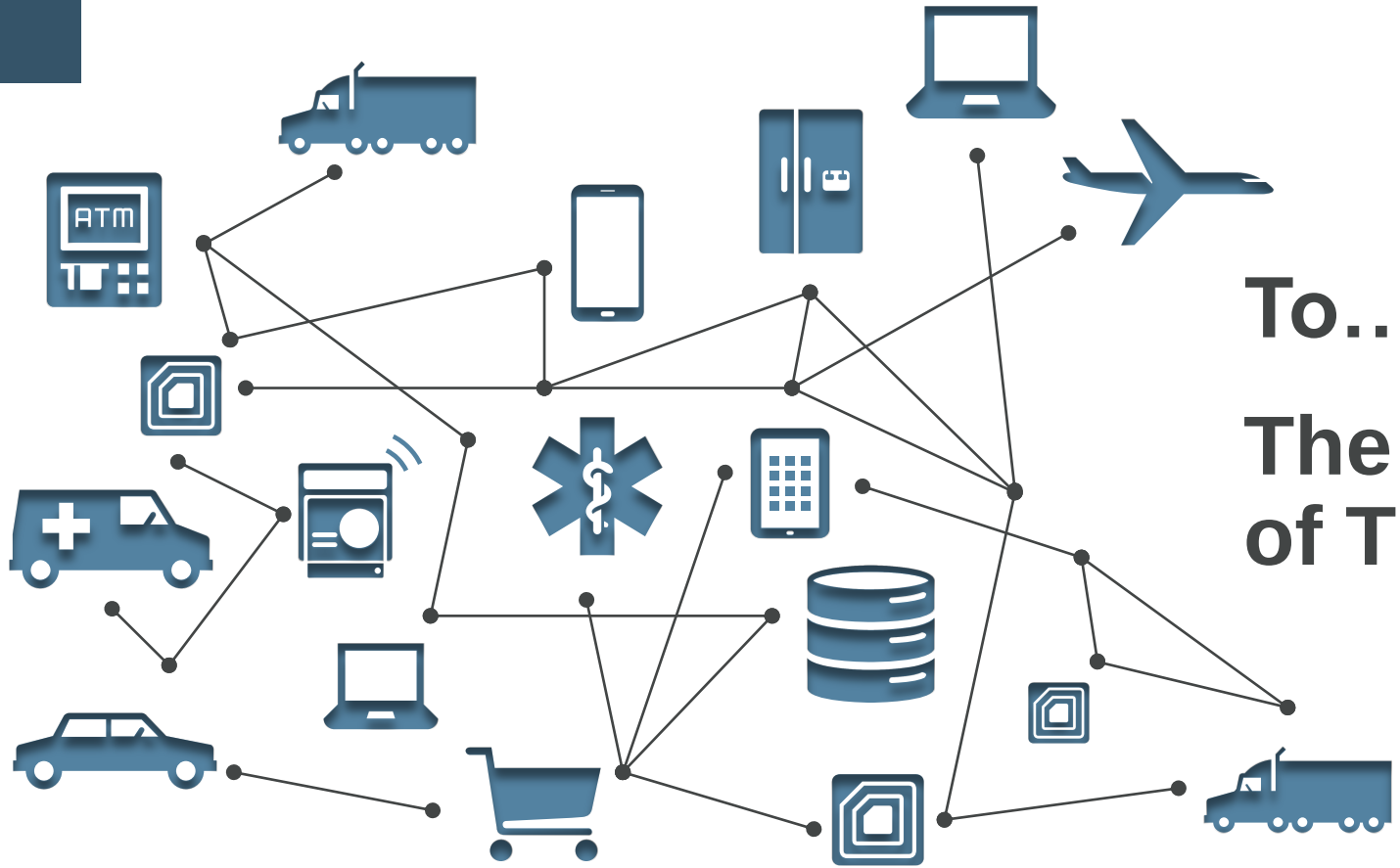


Source: Cisco



From…

Things Connected to the Internet



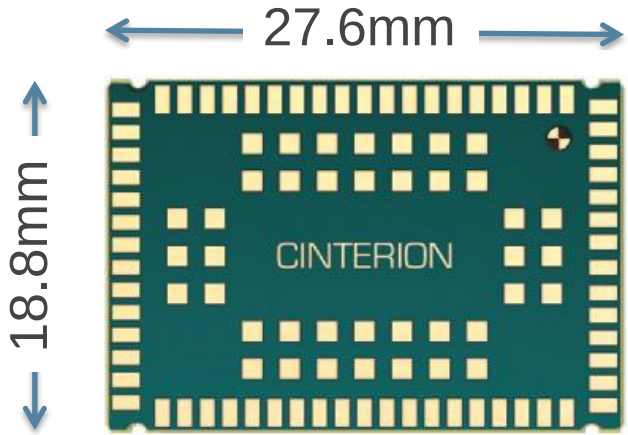
To…

The Internet of Things

Java and 3G in a Tiny Package

- Cinterion EHS5

Really Tiny…

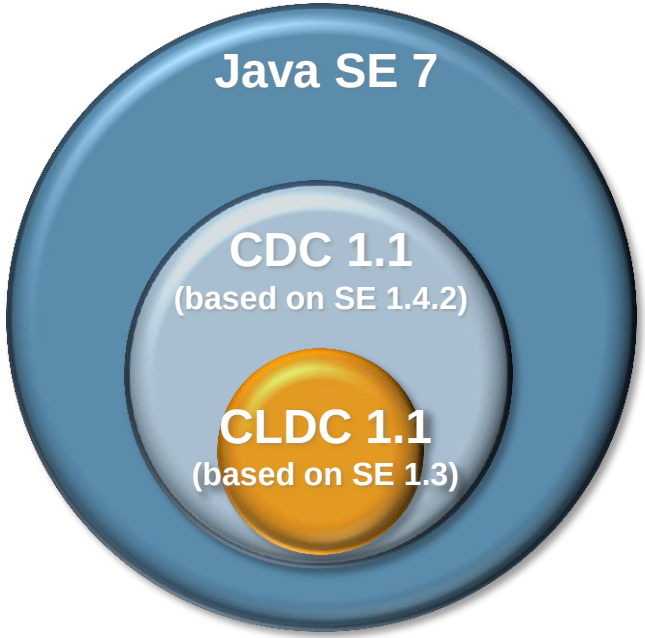


http://upload.wikimedia.org/wikipedia/commons/3/3d/Cloud_forest_Ecuador.jpg

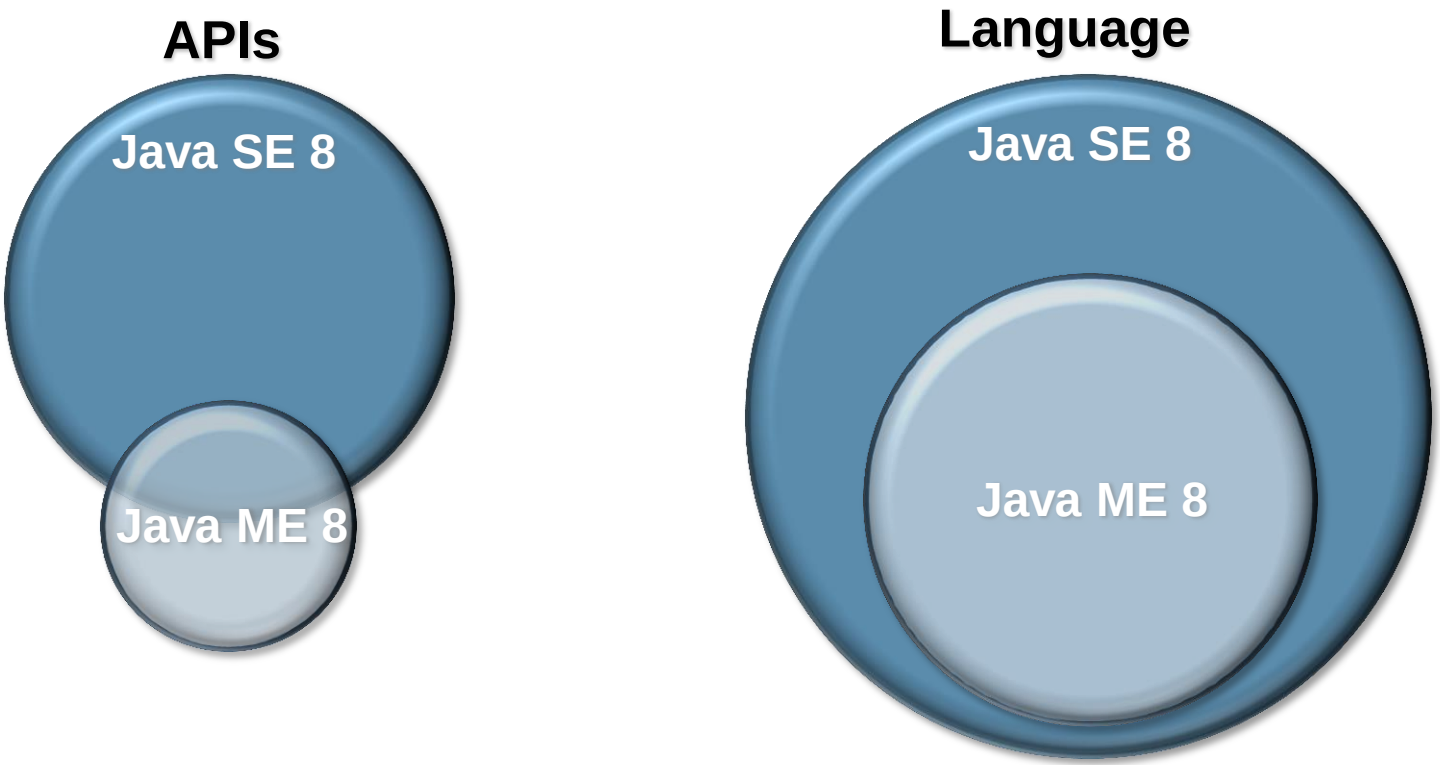
Today

APIs

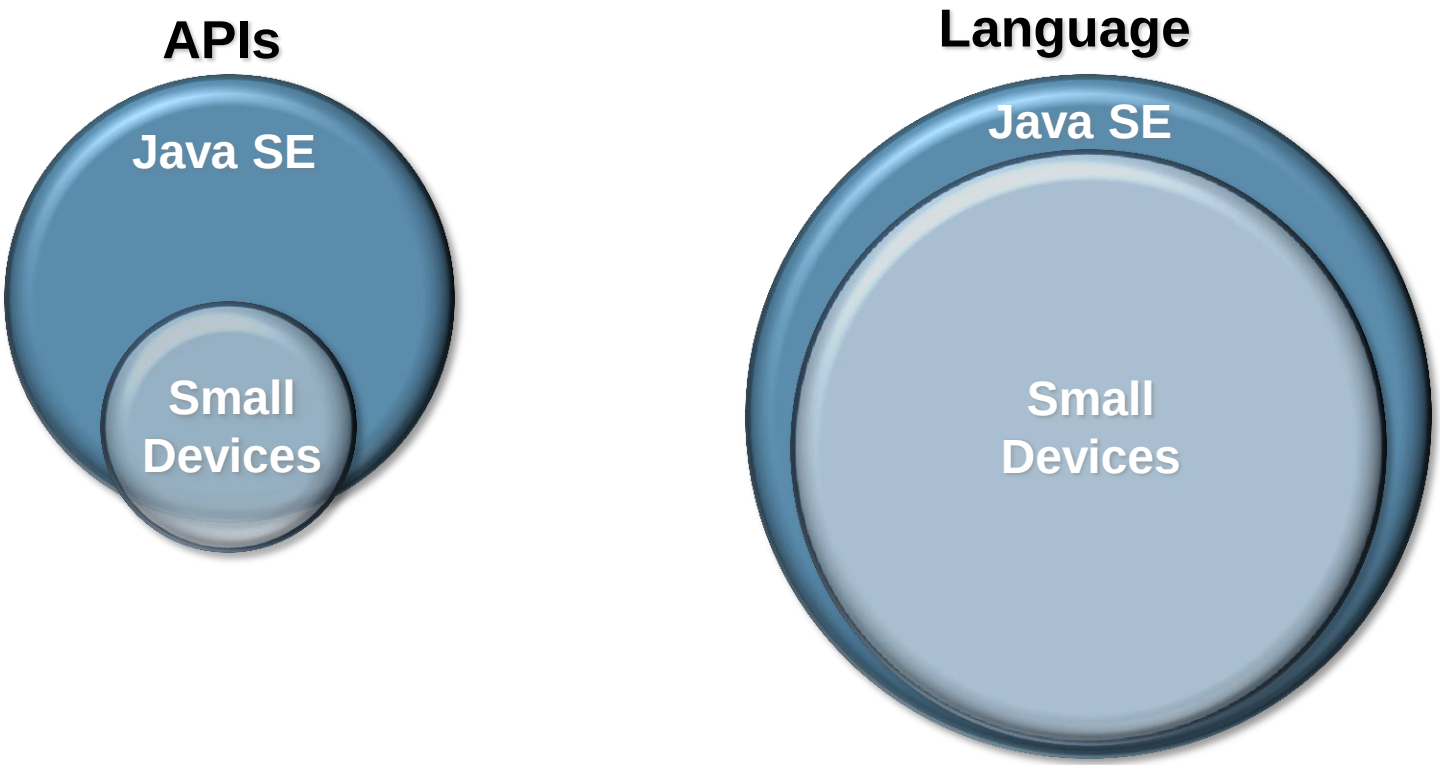
Language



Java 8



Beyond Java 8



	Java Embedded	Native/C/C++
Cross-platform/multi-architecture/	Yes	No
Sandbox security model	Yes	No
Robustness	Excellent	Varied
Multi-tasking/multi-threading	Built-in	Add-on, platform-specific
Automatic memory management	Yes	No
Pre-integrated and customizable	Yes	Varied
Performance	Optimized	Varied
Code updatability	Excellent	Varied
Efficient, scalable development model from small embedded to large systems	Yes	No
Developer community	Large	Fragmented

More Information

Twitter

@Java Embedded

Facebook

ILoveJava

Java Blog

blogs.oracle.com/java

LinkedIn

Embedded Java Developers Network

YouTube

YouTube Java Channel

iotcommunity.net

oracle.com/goto/javaembedded

oracle.com/iot

LeJOS

How it works on the EV3

LEJOS
Java for LEGO Mindstorms

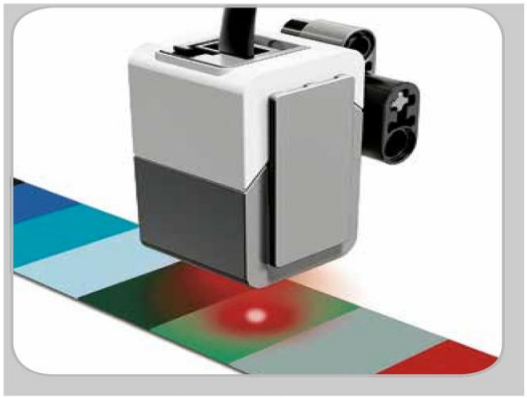
The Heart of the EV3

- TI Sitara AM1808
  - ARM9, 300Mhz
- 64MB RAM / 16MB Flash
- Analog to Digital Converter
- 4 Motor Ports
- 4 Sensor Ports
- Bluetooth / USB
- MicroSD

EV3 Motors

EV3 Sensors

Color and Light Sensor



Color Mode

Reflected Light Intensity Mode

Ambient Light Intensity Mode

Ultrasonic Sensor

Measuring mode Vs Presence Mode

Infrared Sensor

Remote Control

Getting Started with LeJOS

Creating Your SD Card

- Micro SD Card (> 2GB)
- Compatible WIFI adapter
  - NetGear WNA1100
  - EDIMAX EW-7811Un
- Linux (or a Linux VM)

- Details here:

http://sourceforge.net/p/lejos/wiki/Home/

Getting Started with LeJOS

Setting Up Your Dev Environment

- IDE
  - Eclipse Kepler (needed to compile LeJOS source)
- Jars you need:
  - OpenJDK Java 7 Runtime
  - Java Native Access (libjna)
- Download/compile LeJOS Code
  - Repo: git://git.code.sf.net/p/lejos/ev3

Creates ev3classes.jar

Simple LeJOS Application

```
import lejos.nxt.Button;
import lejos.nxt.LCD;
public class EV3FirstProgram {
    public static void main(String[] args) {
        LCD.clear();
        LCD.drawString("First EV3 Program", 0, 5);
        Button.waitForAnyPress();
        LCD.clear();
        LCD.refresh();
    }
}
```

Running on Device

Copy your jar to device:

```
Desktop$ scp EV3FirstProgram.jar root@<ev3 ip>:~
```

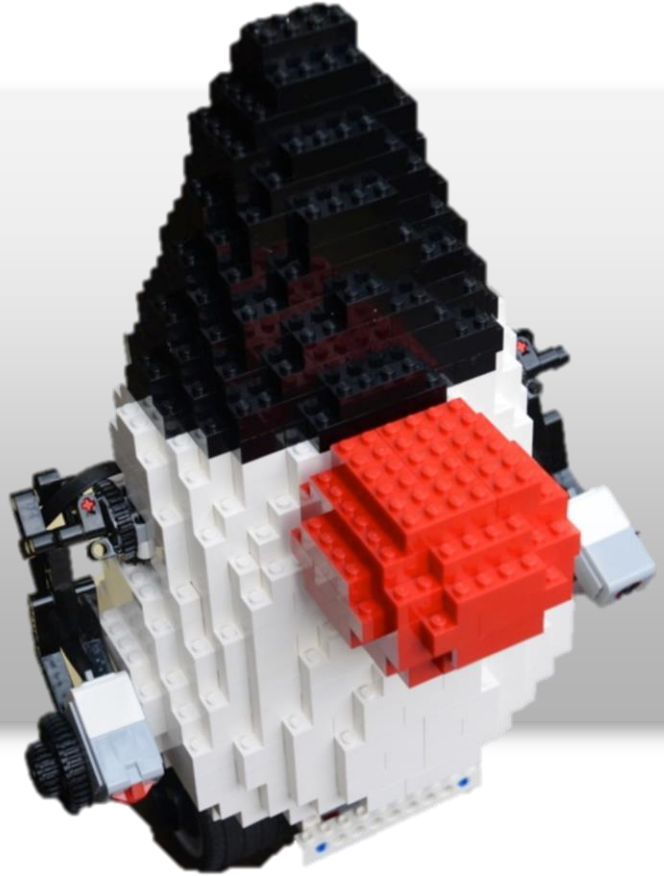
SSH to device (password is blank):

```
Desktop$ ssh root@<ev3 ip>
```

Run program:

```
EV3$ jrun –cp EV3FirstProgram.jar EV3FirstProgram
```

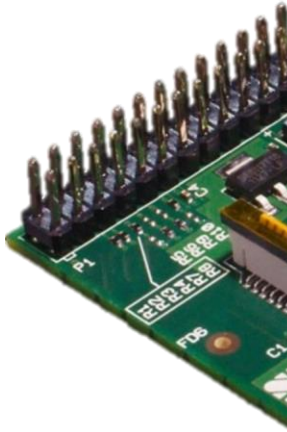
Lego Duke Segway

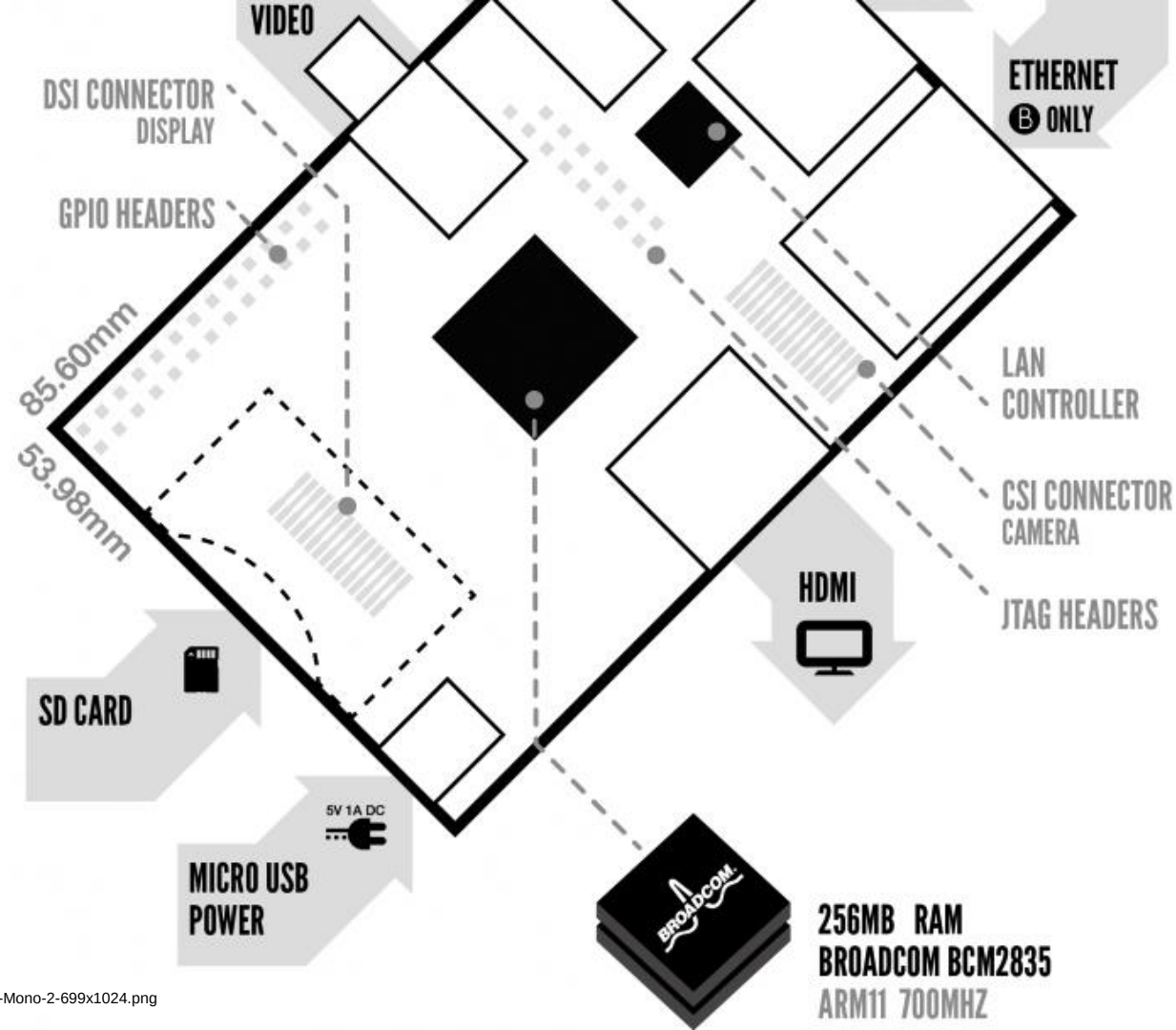


Have Java With Your Dessert

Raspberry Pi

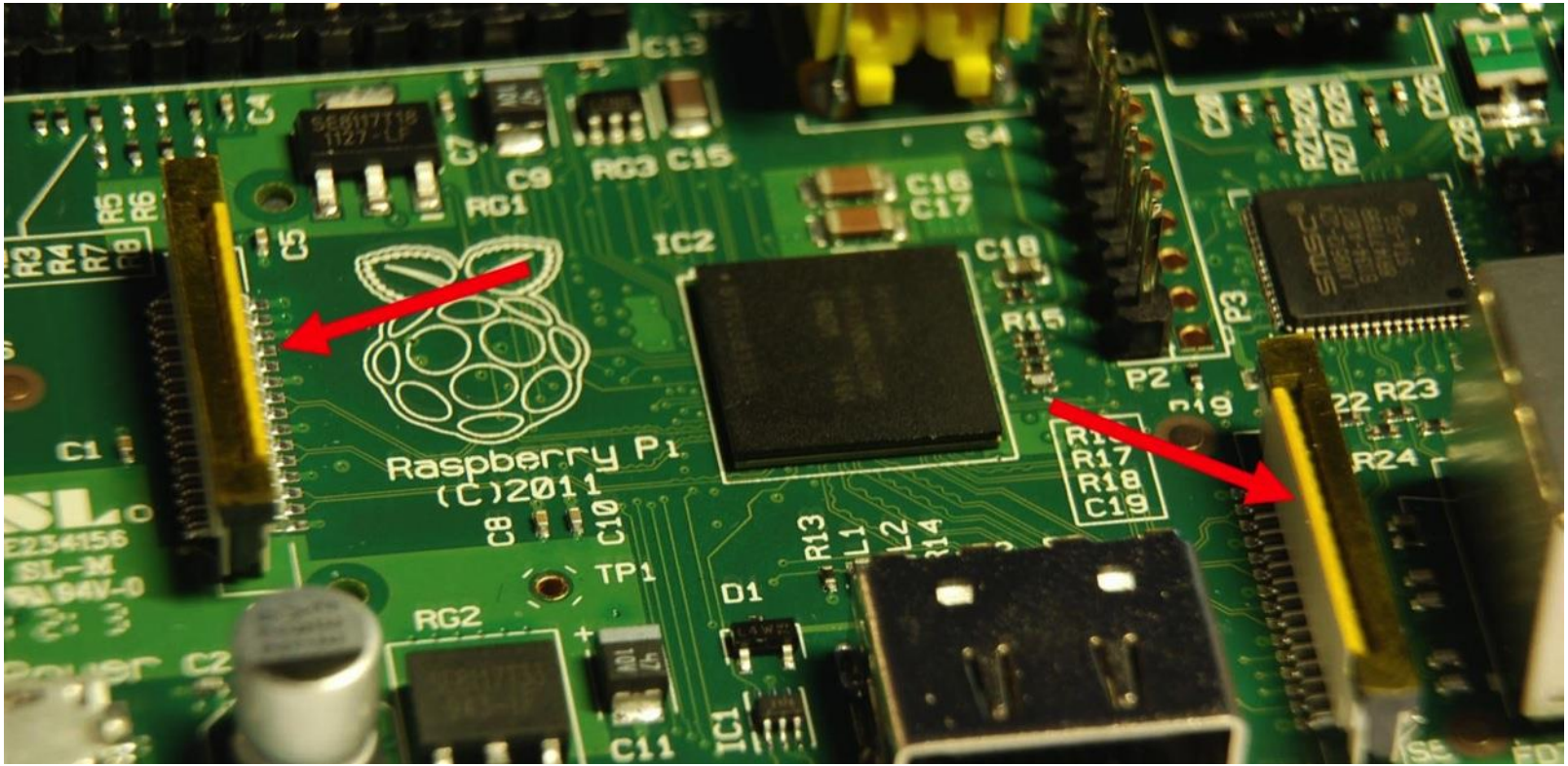
=





 http://elinux.org/File:Raspi-Model-AB-Mono-2-699x1024.png

And what are these for?



 http://i.imgur.com/k0Puu.jpg

Chalkboard Electronics Touchscreen

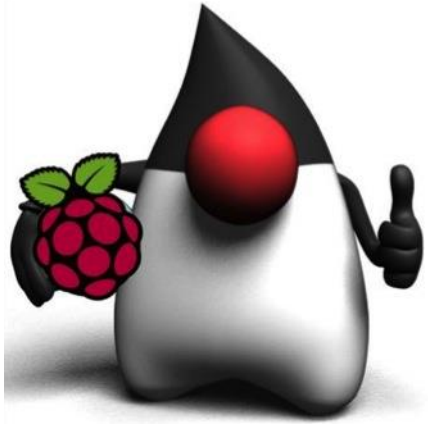
- 10" or 7" Form Factor
- Connects via HDMI/USB
- Tested with JavaFX 8
- 10% Exclusive Discount:

  G1F0U796Z083

Chalkboard Electronics

How to Setup Your Pi

- Step 1: Install Linux
- Step 2: Download/Copy Java 8 for ARM EA
- Step 3: Deploy and Run JavaFX Apps

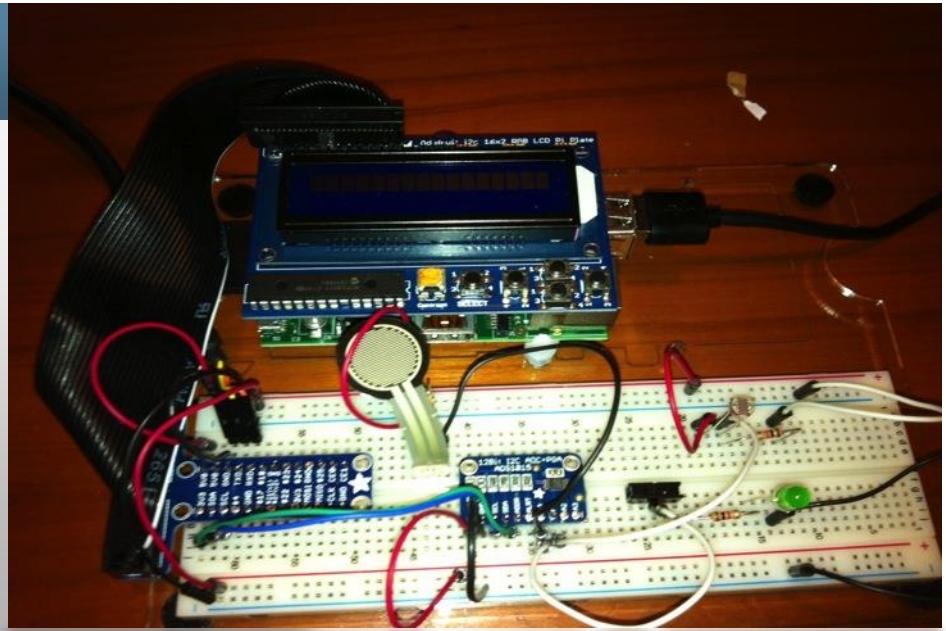


http://steveonjava.com/javafx-on-raspberry-pi-3-easy-steps/

Connecting/Using Sensors & I/O Devices

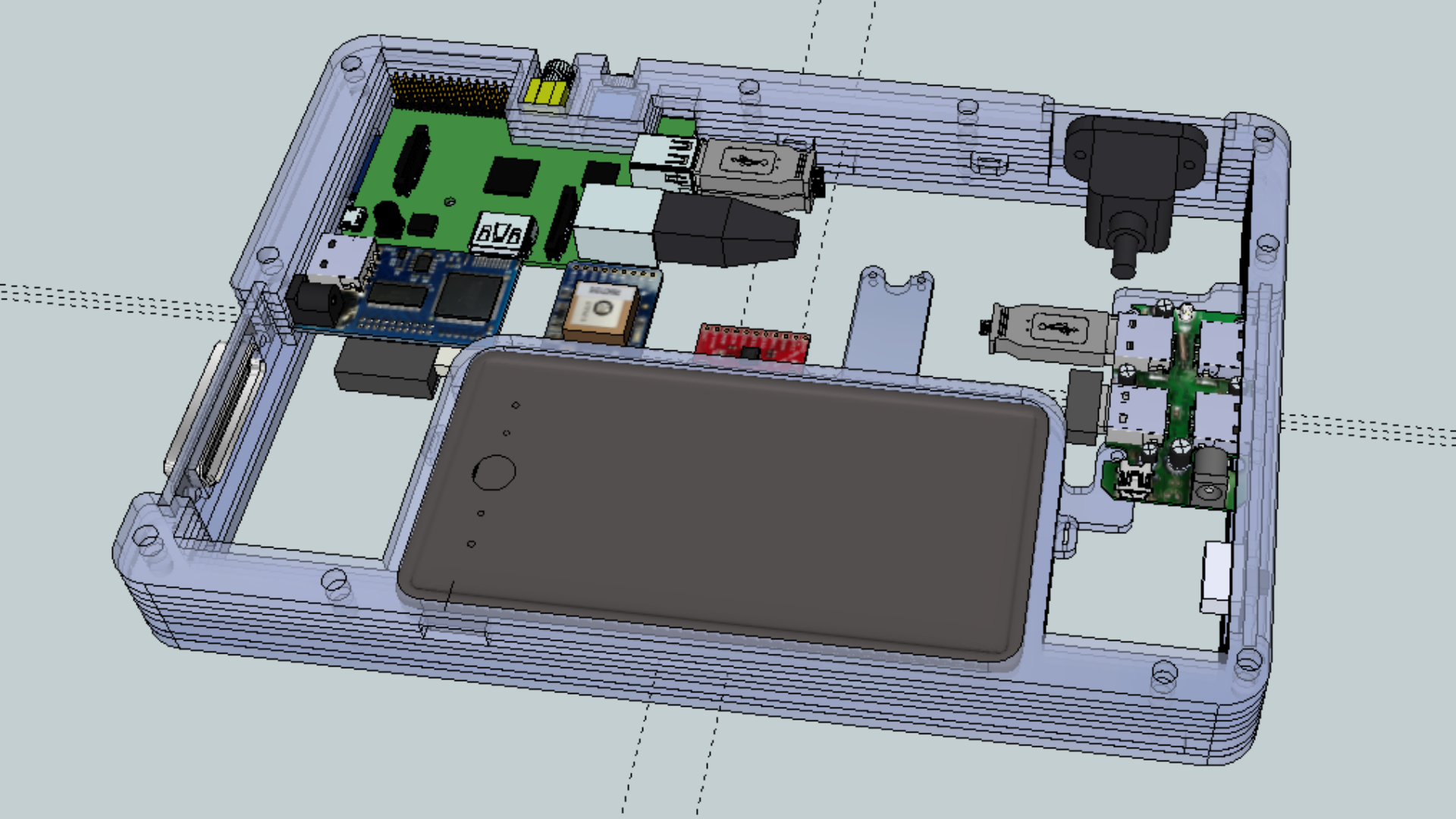
Demo Setup

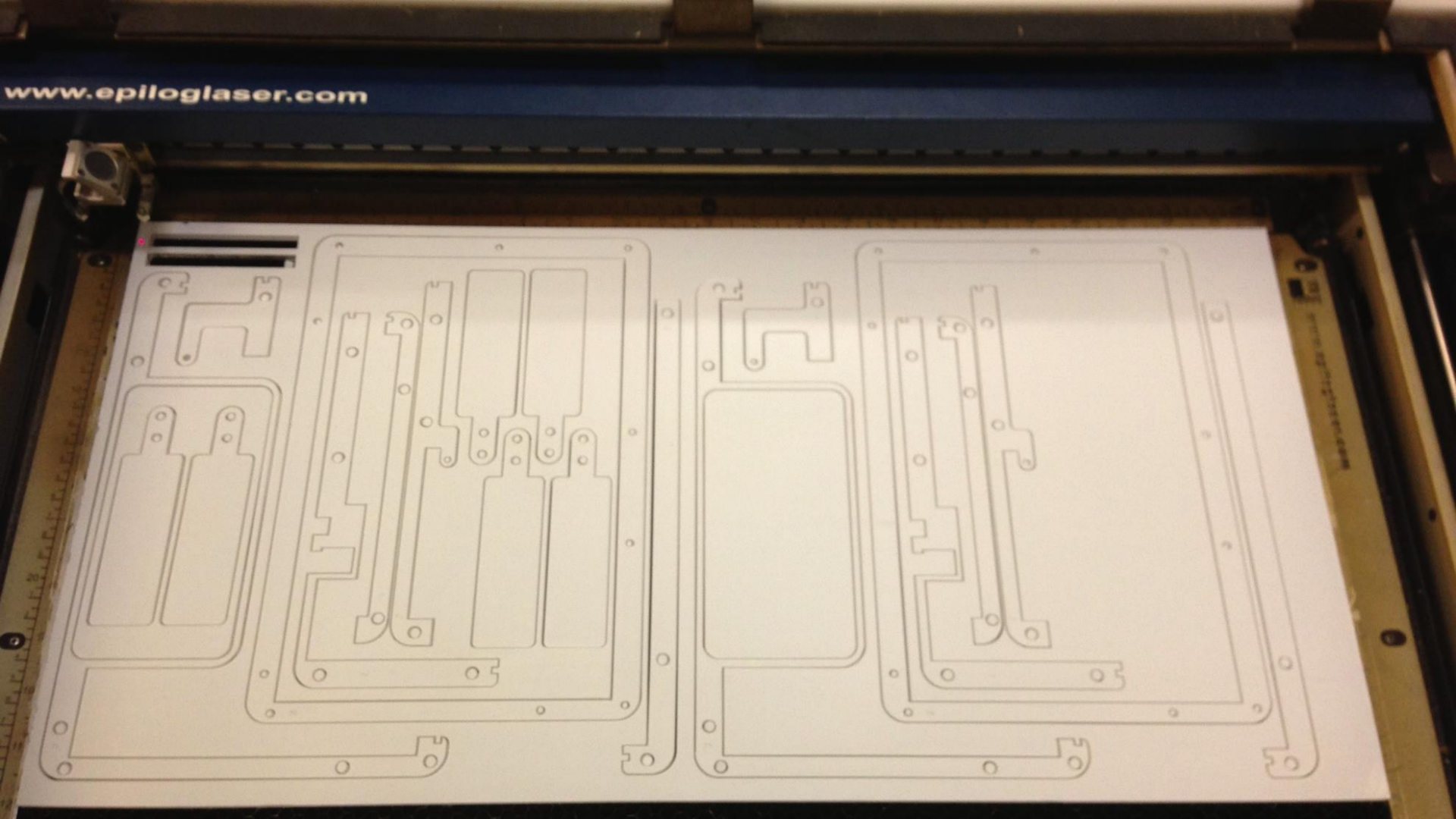
- Raspberry Pi
- LCD Pi Plate
- ADC 1015 Converter
- Force Pressure Sensor
- Photo Cell Sensor
- Pull-up Resistors and LED
- Small Switch to Power Up LED

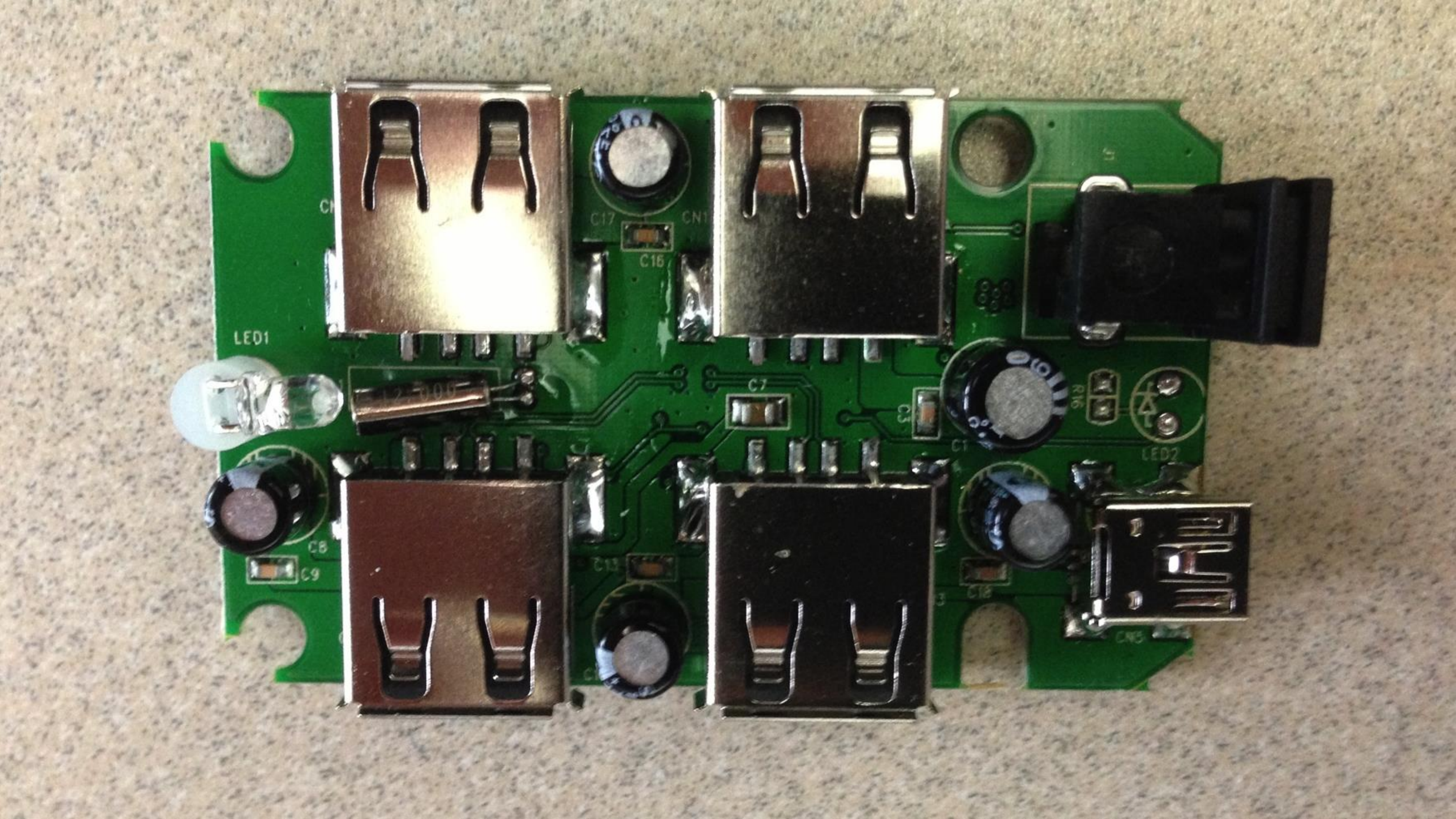


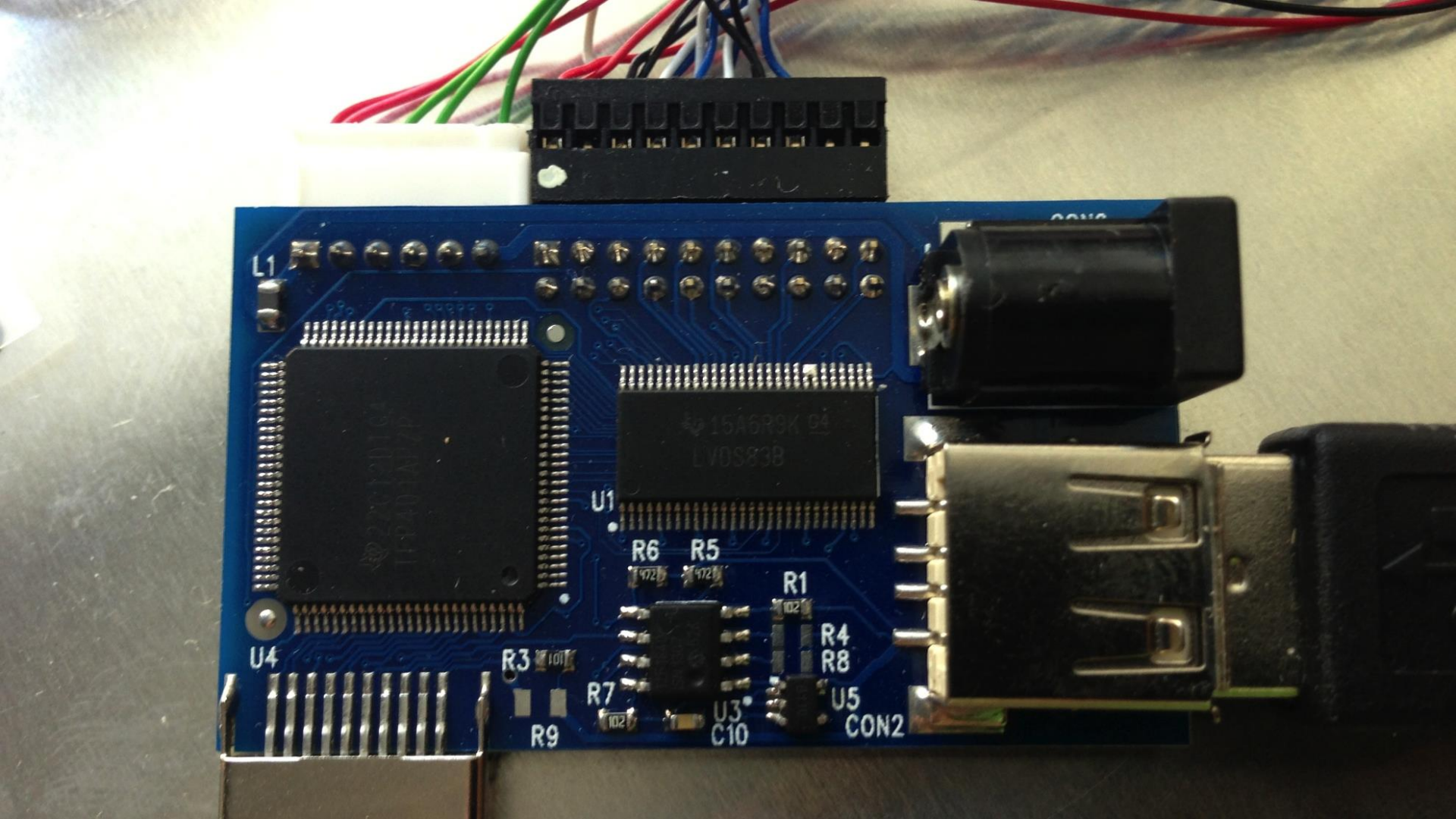
DukePad

http://j.mp/dukepad

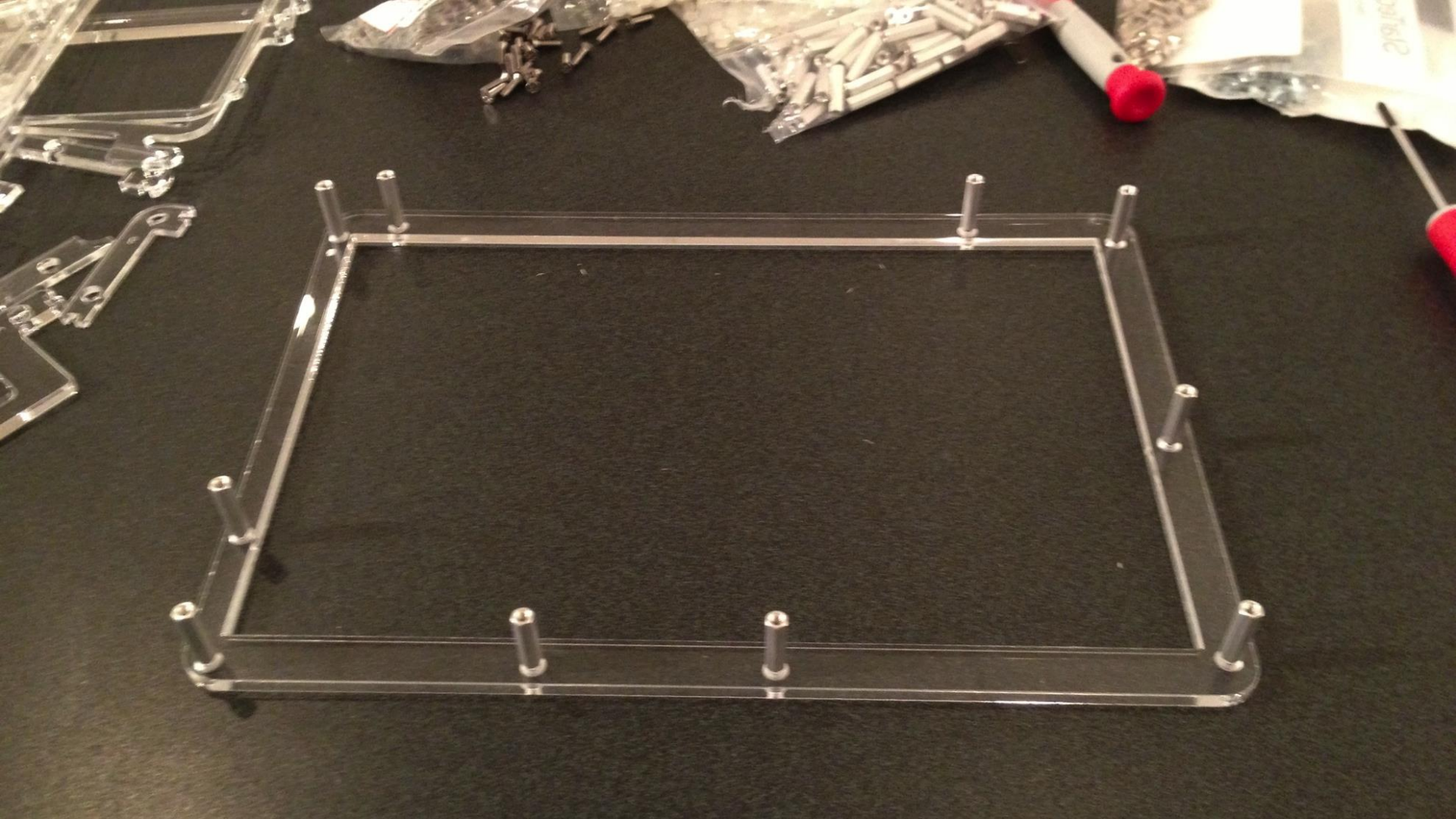


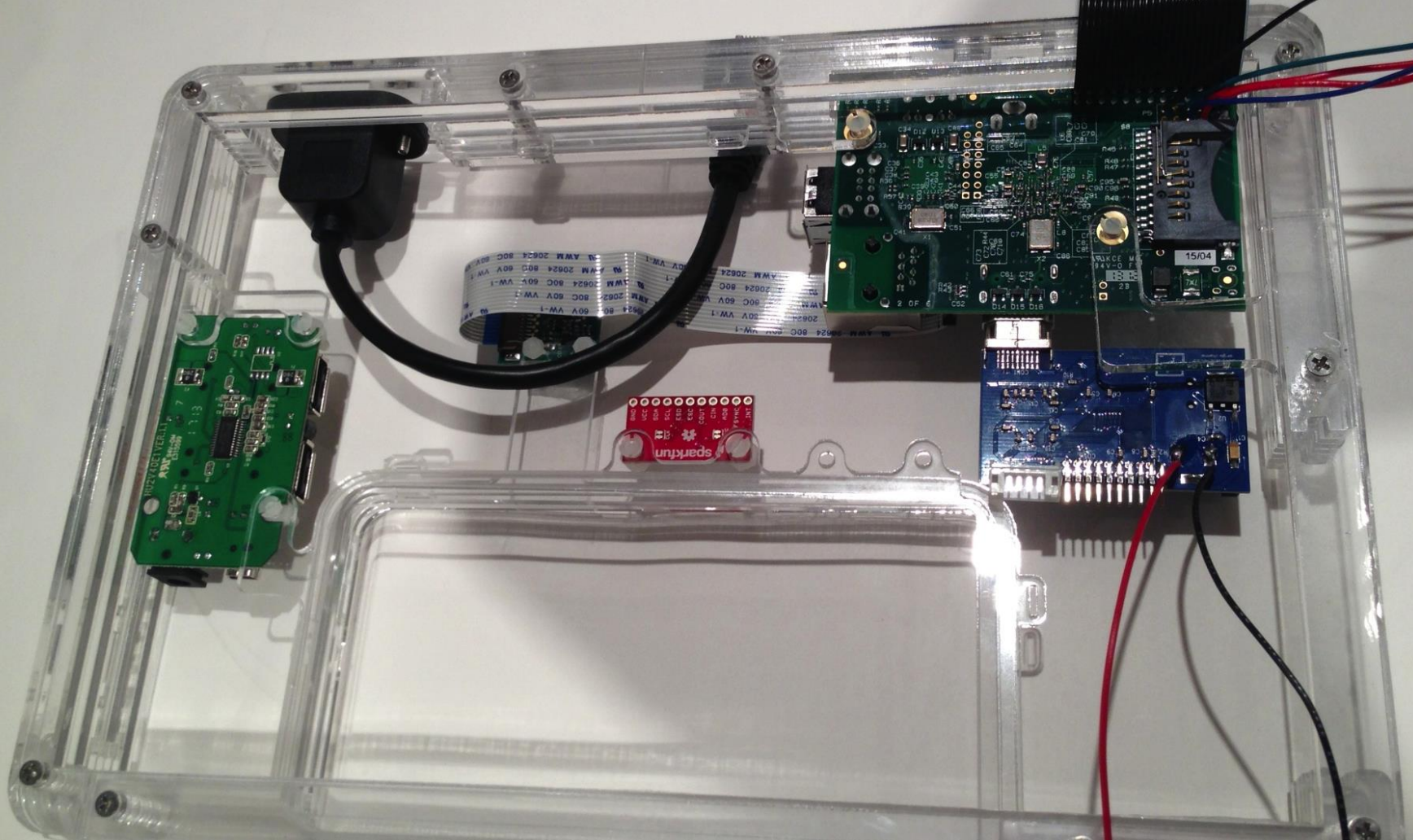

www.epiloglaser.com

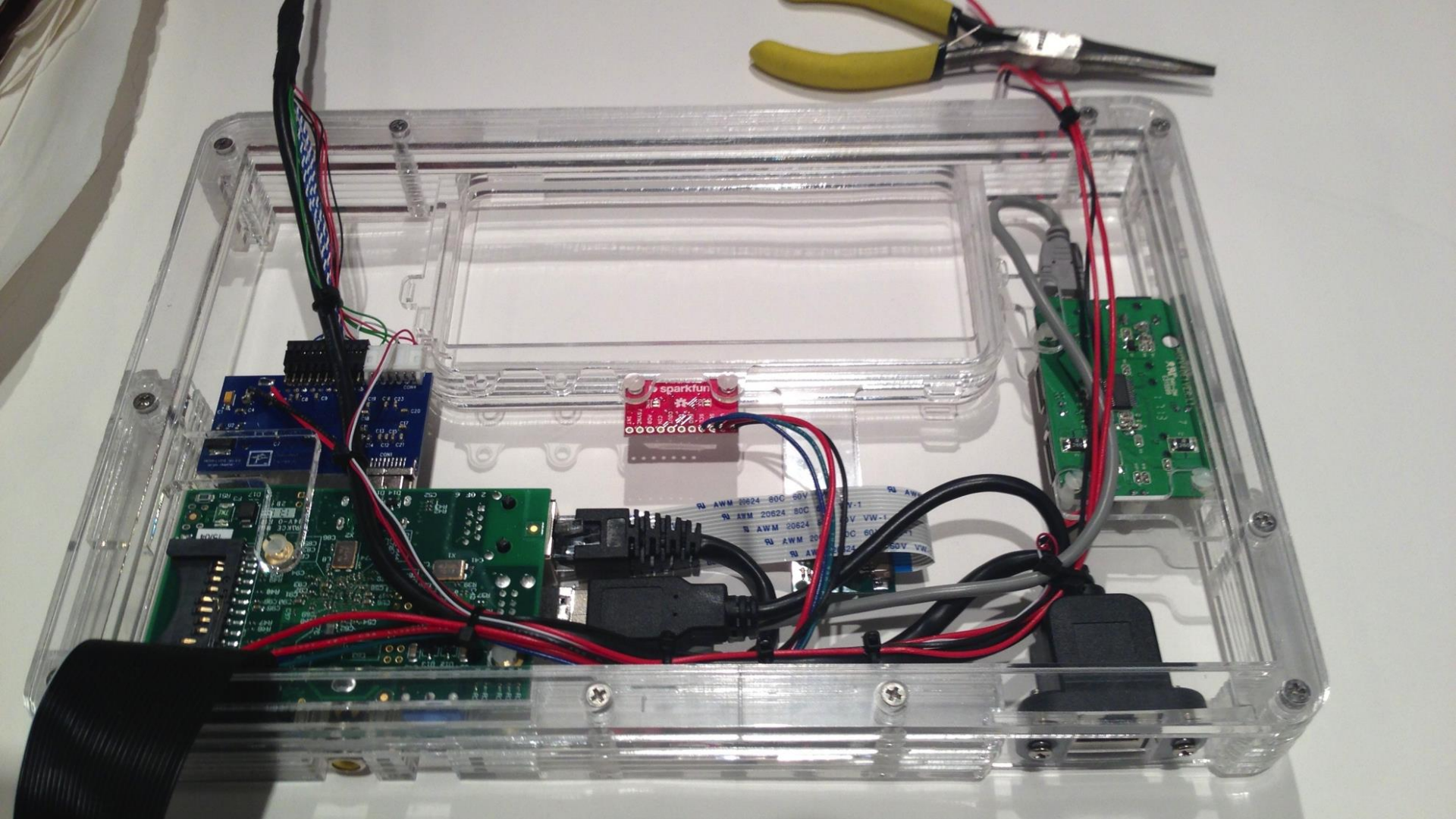

LED1
C17
CN1
C16
C7
C8
C9
C1
LED2
C18
CN5


L1
U1
U4
R6
R5
R1
R4
R8
R3
R7
U5
U3
C10
R9
CON2

ANKER®




15/04
sparkfun


sparkfun


Java™
Post-it

Getting Involved

http://j.mp/dukepad

OpenJDK Wiki

DukePad

Attachments: 7 • Added by Richard Bair, last edited by Richard Bair on Sep 21, 2013 (view change) • Labels None

RoboVM

JavaFX on iOS

Twisted Flowers
Margarita Leskova

Candy Popper
Margarita Leskova

GDX Super Jumper
SpamDrain AB

Formula Car Game Premium for iPh...
Matti Vilola

Gravity Robot
Nemanja Komar

AntiVirus -The super duper accur...
Vision90

Dark Night Avenger : Magic Ride
CreatioSoft Solutions Private Limited

Space Bubble Shooter
Tomasz Kucza

123 Kids Fun Christmas Tree
RosMedia

Oh My Goat
CremaGames S.L.

Gesto: Levels
Huxi Games

Ichigu
Mehmet Atas

Tiny Hope Free
Blyts

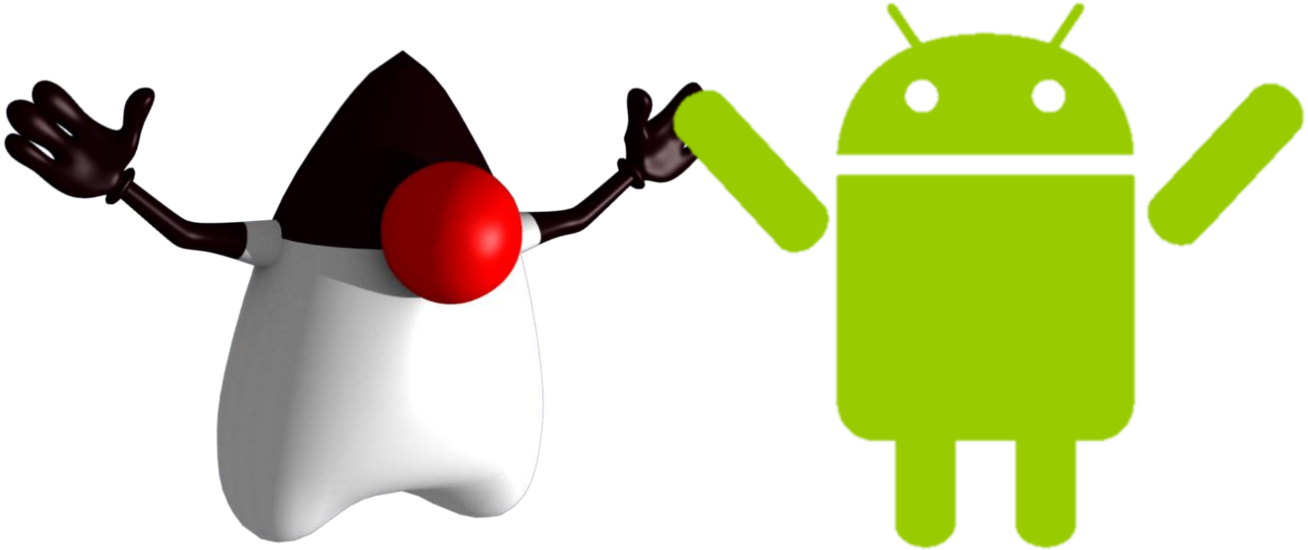
NagiQ 2: Treasure Hunt
Jose Brito

Max the Gold Hunter Plus Free
Joao Ignacio da Silva Neto

Dark Night the Game
Joao Ignacio da Silva Neto

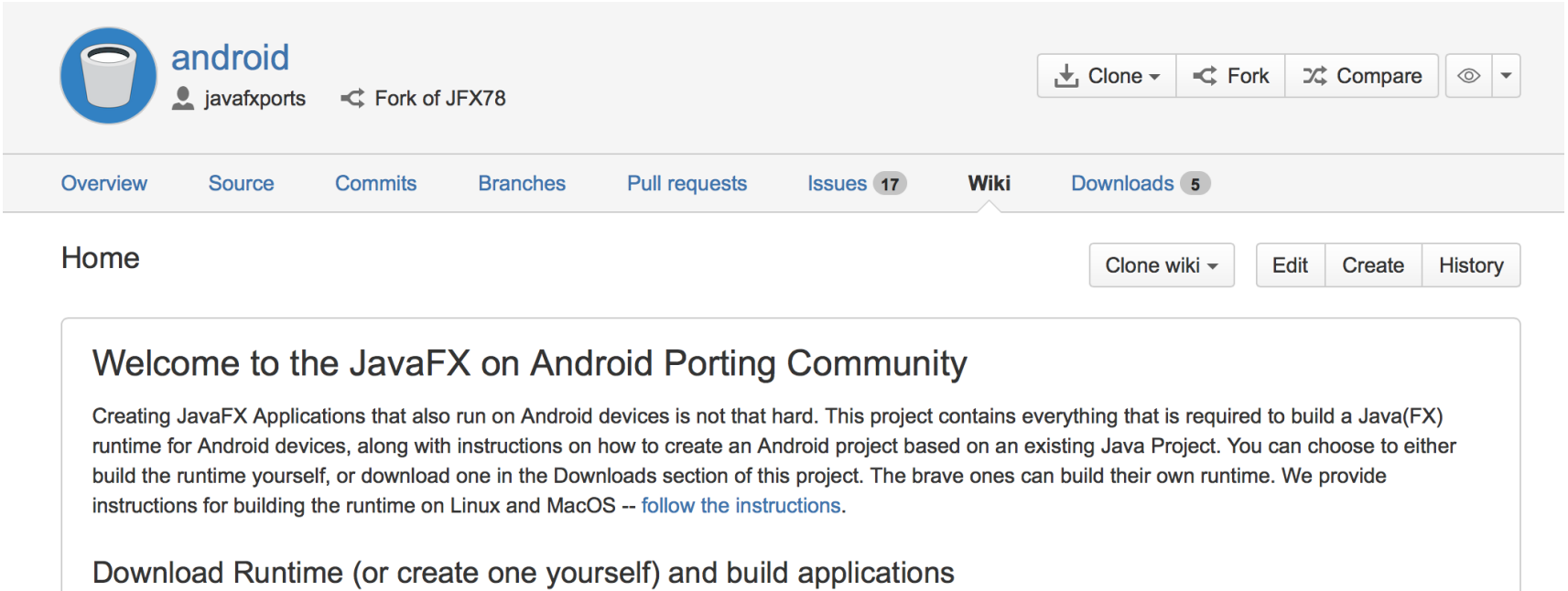
JavaFX on Android

It is about time!



Open Source Effort

https://bitbucket.org/javafxports/android/wiki/Home



JavaOne™

Stephen Chin
tweet: @steveonjava
blog: http://steveonjava.com

NightHacking Tour

Real Geeks
Live Hacking

nighthacking.com

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